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EXAMINER

EASTHOM, KARL D

ART UNIT PAPER NUMBER

2832

DATE MAILED: 06.13.2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/825,446

Applicant(s)

Nakamura et al.

Examiner

Karl Easthom

Art Unit

2832



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on May 20, 2003
- 2a) This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1, 21-28, and 31-59 is/are pending in the application.
- 4a) Of the above, claim(s) 57-59 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 21-28, and 31-56 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on May 20, 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - Certified copies of the priority documents have been received in Application No. \_\_\_\_\_
  - Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\*See the attached detailed Office action for a list of the certified copies not received.

- 14) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
- a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited PTO 892

4) ☐ Interim Summary PTO 113 Paper No. \_\_\_\_\_

1. Claims 55-57 are withdrawn as not drawn to the invention elected by original presentation. The products of claims 21-56 can be made by a materially different method such as without shaving a thickness, especially where no cutting is involved in several of the claimed inventions.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351 (a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1, 23-28, 31-34, 39-45, and 48-56 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. Lee discloses the claimed invention at Figs. 1 or 11. The two metal strips are 20A, 20B, 40A or 40B, with resistor 16 or 14, 16, (Fig. 1), or 38, and/or 34 (Fig. 11). The insulation is 12, 36, 46. For claim 33, the resistor body comprises both strips. The diffusion layer is inherently created since the metals of the strips and resistors are different<sup>1</sup>. The NiCr alloy of claim 25 and copper for the strips of claim 26, and thickness of

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<sup>1</sup> See Inhibitor, col. 2, 30 lines 1-3, 31 lines 1-3. That is, the diffusion layer is created by the reaction of the metal of the strips and the metal of the resistor.

claims 23-24 and like claims is at col. 1, and col. 3, lines 45-55. Claim 27 is inherent in the materials, and in claim 28, the thickness is adjusted at the noted column as it is selected. The claims 31-32 and like claims is disclosed at top of col. 4 as epoxy resin. The bonding position of claim 34 is where 48 is at Fig. 11.

4. Claims 33, 45, and 54-56 are rejected under 35 U.S.C. 102(b) as being anticipated by Smejkal. Smejkal discloses the claimed invention at Fig. 7A. The two bonding electrodes are the part 66 that is opposite to metal strip electrodes 30, with resistor 28. In claim 33, there is a straight path between the electrodes such as represented by the line 58. In fact, there are several. In Fig. 7 there are a series of straight and uniform current paths in each cut section, interpreting the phrase in light of applicant's specification, where applicant has a series of straight paths in Fig. 1 but the overall path is not straight from one electrode all the way to the other, the latter not being claimed. (See claim 56 where it is claimed, indicating it is not for the other claims.). Or, and as to claim 56, prior to trimming, as in Fig. 4, there is a straight and uniform current path. Or alternatively, trimming is performed only if the desired resistance is not high enough, such that a noncut resistor is disclosed because any desired resistance is desired. See col. 3, lines 43-55, where "each body is adjusted to its desired resistance value". That is, if the resistance value in the uncut resistor is desired, it is not adjusted.). The diffusion layer is created by the cladding process disclosed at col. 3, lines 3-12, where the joining by the high pressure necessarily results in diffusion else the materials would not be joined.

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join with interdiffusion due to the dissimilar metals and temperatures of use, as per col. 3, lines 3-12.

5. Claims 1, 22, 25, 28, 33-35, 38, 41, 44, 45, 47, 50 and 53-56 are rejected under 35 U.S.C. 102(b) as being anticipated by Person et al. '083. Person discloses claim 1 at Figs. 5-6 or 11-12 with electrodes 14, 16. Also, electrodes 50 at Fig. 12 are flat before either before they are bent or comprise flat parts at top after bending. Or electrodes 70, 74 are flat at Fig. 15. The electrodes affixed on the top diffuse inherently because the metal of the resistor 34 and that of the electrodes 14, 16 are dissimilar. The electrodes comprise a flat tetragonal shape since the part on top is flat. See eg. Lahiri for evidence that two dissimilar metals diffuse inherently. Note too that crimping occurs at col. 2, lines 63-69 where applicant indicates that pressure causes diffusion. The insulation layers at Fig. 11 are 52, 40, or are as disclosed generally at col. 2, lines 52-57. No cutting is an option for all embodiments as noted at col. 2 where wire brushing is an option employed to remove the conductive material without cutting, or as noted at col. 5, lines 40-45 indicating the resistors can be solid or cut. This meets the straight path for claims 36 and 56 and like claims. The bonding electrodes for claims 33, 45 and 54 are disclosed at Fig. 6 (as 14, 16 on both sides), or Figs. 16-17 (68-74 also on both sides). For claims 22, 28, 38, 44, 47, and 53 the thickness of 1-8 mils is varied, thus adjusting the resistance, at col. 4, lines 1-25, ranges from 25-200um. For claim 25, 41, 50. EVANOHM at col. 2 meets the claims. For claim 35, the electrodes are nickel. The bonding location of claim 34 is anywhere on the top electrode. Finally, it is noted that "straight and uniform everywhere between the electrodes" is claimed in claim 56, so that straight everywhere is not required for the other claims either in the resistor or electrodes.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 26, 31-32, 42 and 51 are rejected under 35 U.S.C. 103(a) as obvious over Person et al. '083 in view of Smejkal. Person discloses the invention as noted above except the copper electrodes and epoxy. Copper is disclosed by Smejkal at col. 3, lines 1-12 for a resistive alloy strip similar to that of Person for the purpose of forming dissimilar metals in a cladding process to form a good electrode bond such that the copper would have been obvious to form a good bond. Epoxy is disclosed at Smejkal col. 1 by way of incorporation of Rainer, disclosing epoxy as a good insulation material for resistors such as Person and Smejkal.

8. Claims 45-46, 49, 51, and 53 are rejected under 35 U.S.C. 103(a) as obvious over Smejkal et al. in view of Szwarc et al. or Person. Smejkal discloses the invention as noted above except here, the straight uniform path is assumed claimed from electrode to electrode. Szwarc discloses such an arrangement for the resistor 12 in order to minimize the trimming such as occurs in Smejkal, as noted at col. 2, lines 25-52 of Szwarc. Smejkal discloses trimming only when necessary, so that lack of trimming and making a straight resistor would have been obvious in order to save time. Similarly, as noted above, Person discloses trimmed or cut resistors, and straight

where trimming is a term of art known to be used only when necessary to adjust the resistance so that such a cut would have been obvious to obtain the desired resistance value.

9. Claim 1 is rejected under 35 U.S.C. 103(a) as obvious over Smejkal et al. in view of Gerber. Gerber discloses the claimed invention, except the layer of insulation completely covering the opposite side of the resistor. Gerber discloses layer 18 completely covering the resistor in order to protect a user for electrical shock or to protect the resistor from corrosion, where such motivations are well known in the industry, such that such a covering would have been obvious.
10. Claims 21, 23, 24, 27, 36-37, 39, 40, 43, 46, 48-49, and 52 are rejected under 35 U.S.C. 103(a) as obvious over Smejkal et al. or Person '083, in view of Shindy et al. Person or Smejkal disclose the claimed invention as noted above, except the solder thickness, the material, and the relative electrode to resistor thickness. Shindy et al. discloses a fused solder layer 7 in the claimed thickness at col. 3, lines 31-46 for the purpose of making a uniform solder layer of increased reliability due to a smoother surface that holds less contaminants, such that it would have been obvious to render such a thickness where solder is disclosed by Smejkal. The solder is "fused" where it is melted. In claims 21 and 46, the tin solder at col. 4, lines 55-60 meets the claim. In claims 24 and 49, the thicknesses of the resistor and electrode 28, 30 appear about equal where the device is described as having double thickness at the electrodes, see claim 8 of Smejkal et al. Also, in Person at col. 4, lines 3-40, the relative electrode to resistor thickness is described as "substantially less".

suggesting the claimed ranges where the resistor thickness is from 25-200um as noted above.

In claims 26 and 51, the electrodes are copper at col. 3, line 6.

11. Claims 21, 23, 24, 27, 36-37, 39, 40, 43, 46, 48-49, and 52 are rejected under 35

U.S.C. 103(a) as obvious over Smejkal et al. or Person '083 in view of Takeuchi et al.

Smejkal or Person disclose the claimed invention, as noted above, except the solder and electrode thickness. That thickness is disclosed as standard in the art for a surface mounted chip resistor at col. 9, lines 30-33 for mounting thereof such that it would have been obvious to form the claimed thickness for the layers of Smejkal et al. whereat a surface mounted chip resistor is also disclosed for mounting. For claim 27, and like claims, the noted materials have the claimed resistivity inherently.

12. Applicant's arguments filed 5/20/03 with respect to the claims have been considered but are moot in view of the new ground(s) of rejection. The indication of allowability is withdrawn due to the new references indicating that diffusion is inherent.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl Easthom whose telephone number is (703)308-3306.

The examiner can normally be reached on M-Th. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin Enad, can be reached on (703)308-7619. The fax phone number for the organization where this application or proceeding is assigned is (703)308-7722. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.